HITACHI
SERVICE MANUAL

TY | No. 294 EGF

HS - 40F
HS - 50F

HS-40F

HS-50F

CONTENTS

SPECIFICATIONS 1
STRUCTURE AND FEATURES..... 2
REPLACEMENT PARTS LIST..... 3
PRINTED WIRING BOARD 4
CIRCUIT DIAGRAM..... 4
SERVICE POINT..... 6
CHARACTERISTICS 6

SPECIFICATIONS · TECHNISCHE DATEN · CARACTÉRISTIQUES TECHNIQUES

HS-40F

Enclosure type:	Bass reflex system
Enclosure volume:	40 liters
Speaker units:	
Woofer:	25 cm metal cone, gathered edge, flat foamed resin-filled surface
Midrange:	5.5 cm metal cone, Diffraction Effect Self-Compensted
Tweeter:	2 cm metal dome, Diffraction Effect Self-Compensted
Frequency response:	40–20,000 Hz (–15 dB)
Crossover frequency:	800 Hz 2,800 Hz
Impedance:	6 ohms
Rated input power:	50 W (DIN)
Max. input power:	100 W (Music signal peak)
Output sound pressure level:	91 dB (2.83 V)
Dimensions:	31.5(W) x 56.0 (H) x 32.0(D) cm
Weight:	14 kg
Accessory:	Speaker cord

Gehäuse:	Tiefenreflexsystem
Volumen:	40 Liter
Lautsprecher:	
Tieftöner:	25 cm Metallkonus, Kräuselsicke, flache, mit Schaumharz ausgefüllte Oberfläche
Mitteltöner:	5,5 cm Metallkonus,
Hochtöner:	2 cm Metallkalotte,
Frequenzgang:	40–20,000 Hz (–15 dB)
Übergangsfrequenz:	800 Hz 2,800 Hz
Impedanz:	6 Ohm
Nennbelastbarkeit:	50 W (DIN)
Spitzenbelastbarkeit:	100 W (Musik leistungsspitze)
Schalldruckpegel:	91 dB (2,83 V)
Abmessungen:	31,5(W) x 56,0(H) x 32,0(D) cm
Gewicht:	14 kg
Zubehör:	Lautsprecher-Kabel

Type d'enceinte:	System baffle réflex
Volume du coffret:	40 litres
Haut-parleurs:	
Woofer:	Cône métallique de 25 cm, bord rentré, surface plate remplie de mousse de résine
Médium:	Cône métallique de 5,5 cm,
Tweeter:	Dôme métallique de 2 cm,
Réponse de fréquences:	40–20,000 Hz (–15 dB)
Fréquence de recouvrement:	800 Hz 2,800 Hz
Impédance:	6 ohms
Puissance d'entrée nominale:	50 W (DIN)
Puissance d'entrée max.:	100 W (Crête de signal musical)
Niveau de pression sonore en sortie:	91 dB (2,83 V)
Dimensions extérieures:	31,5(W) x 56,0(H) x 32,0(D) cm
Poids:	14 kg
Accessoire fourni:	Cordon de baffle

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

SPEAKER SYSTEM

September 1981 TOYOKAWA WORKS

HS-50F

Enclosure type:	Bass reflex system
Enclosure volume:	60 liters
Speaker units:	
Woofer:	30 cm metal cone, gathered edge, flat foamed resin-filled surface
Midrange:	5.5 cm metal cone, gathered edge, Diffraction Effect Self-Compensted
Tweeter:	2 cm metal dome, Diffraction Effect Self-Compensated
Frequency response:	35–20,000 Hz (–15 dB)
Crossover frequency:	630 Hz 2,800 Hz
Impedance:	6 ohms
Rated input power:	60 W (DIN)
Max. input power:	120 W (Music signal peak)
Output sound pressure level:	91 dB (2.83 V)
Dimensions:	37.5(W) x 63.0(H) x 37.0(D) cm
Weight:	19 kg
Accessory:	Speaker cord

Gehäuse:	Tiefenreflexsystem
Volumen:	60 Liter
Lautsprecher:	
Tieftöner:	30 cm Metallkonus, Kräuselsicke, flache, mit Schaumharz ausgefüllte Oberfläche
Mitteltöner:	5,5 cm Metallkonus, Kräuselsicke,
Hochtöner:	2 cm Metallkalotte,
Frequenzgang:	35–20 000 Hz (–15 dB)
Übergangsfrequenz:	630 Hz 2 800 Hz
Impedanz:	6 Ohm
Nennbelastbarkeit:	60 W (DIN)
Spitzenbelastbarkeit:	120 W (Musik)
Schalldruckpegel:	91 dB (2,83 V)
Abmessungen:	37,5(W) x 63,0(H) x 37,0(D) cm
Gewicht:	19 kg
Zubehör:	Lautsprecher-Kabel

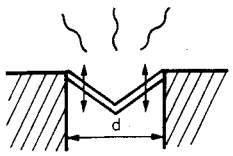
Type d'enceinte:	System baffle réflex
Volume du coffret:	60 litres
Haut-parleurs:	
Woofer:	Cône métallique de 30 cm, bord rentré, surface plate remplie de mousse de résine
Médium:	Cône métallique de 5,5 cm, Bord plissé,
Tweeter:	Dôme métallique de 2 cm,
Réponse de fréquences:	35–20 000 Hz (–15 dB)
Fréquence de recouvrement:	630 Hz 2 800 Hz
Impédance:	6 ohms
Puissance d'entrée nominale:	60 W (DIN)
Puissance d'entrée max.:	120 W (Crête de signal)
Niveau de pression sonore en sortie:	91 dB (2,83 V)
Dimensions extérieures:	37,5(W) x 63,0(H) x 37,0(D) cm
Poids:	19 kg
Accessoire fourni:	Cordon de baffle

STRUCTURE AND FEATURES·AUFBAU UND MARKMALE·STRUCTURE ET CARACTERISTIQUES

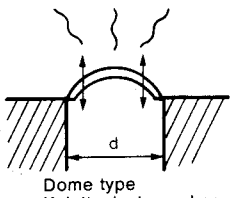
The plane equivalent type (Diffraction effect self-compensated) speaker is a speaker which uses the combined effect of the cavity effect of the cone and the convexity effect of the dome to compensate within the used band; it is light and has good efficiency with its characteristics resembling those of a plane diaphragm.

Der DESC-Lautsprecher (Diffraction Effect Self Compensated = Diffraktions-Effekt mit Selbst-Kompensierung) kombiniert den Kavitätseffekt des Konuslautsprechers mit dem Konvexitätseffekt des Kalottenlautsprechers, um innerhalb des gegebenen Frequenzbandes eine Kompensation vorzunehmen. Diese Lautsprecher ist extrem leicht und weist die Übertragungseigenschaften eines Flachmembranlautsprechers auf.

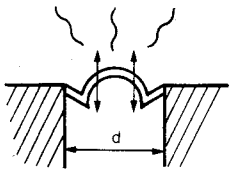
Le modèle à plan équivalent (Auto-compensation de diffraction) est une haut-parleur qui exploite l'effect combiné de l'effet de cavité du cône et l'effet de convexivité du dôme pour compenser la bande utilisée; son poids est réduit et son rendement est excellent avec des caractéristiques identiques à celles de la membrane plan.



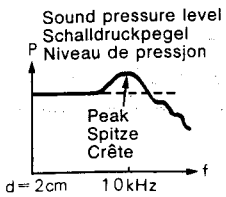
Cone type
Konuslautsprecher
Type à cône

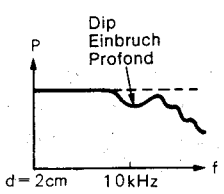


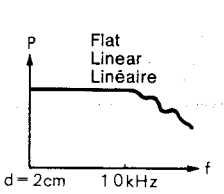
Dome type
Kalottenlautsprecher
Type à dôme



D.E.S.C.
DESC-Lautsprecher
D.E.S.C.







REPLACEMENT PARTS LIST·ERSATZTEILLISTE·TABLEAU DES PIÉCE

HS-40F

SYMBOL No.	PART No.	DESCRIPTION		
CAPACITORS				
C101	0257211	Electrolytic	47μF	50V
C201	0279277	Mylar, film	2.2μF ±10%	125V
C301	0257072	Electrolytic	22μF	50V
C302	0221541	Styrol	5600pF ±10%	125V
C401	0257206	Electrolytic	6.8μF	50V
C501	0279275	Mylar, film	1μF ±10%	125V
C601	0257205	Electrolytic	4.7μF	50V
C801	0279231	Mylar, film	4.7μF ±10%	250V
C901	0279275	Mylar, film	1μF ±10%	125V
RESISTORS				
R101	0149476	Wire wound	27Ω ±10%	RWC7
≀	≀	≀	≀	≀
R105	0149476	Wire wound	27Ω ±10%	RWC7
R201	0149461	Wire wound	6.8Ω ±10%	RWC7
R301	0149474	Wire wound	18Ω ±10%	RWC7
R302	0149474	Wire wound	18Ω ±10%	RWC7
R401	0149461	Wire wound	6.8Ω ±10%	RWC7
R501	0149155	Wire wound	2.2Ω ±10%	RWC5
R601	0149161	Wire wound	6.8Ω ±10%	RWC5
R701	0149161	Wire wound	6.8Ω ±10%	RWC5
COILS				
L101	2227195	Network coil – 2.2mH		
L201	2227194	Network coil – 1.5mH		
L301	2227131	Network coil – 0.4mH		
L401	2227131	Network coil – 0.4mH		
L501	2227194	Network coil – 1.5mH		
L601	2227131	Network coil – 0.4mH		

SYMBOL No.	PART No.	DESCRIPTION
VARIABLE RESISTORS		
R200	0168511	Volume attenuator (for midrange)
R600	0168511	Volume attenuator (for tweeter)
MISCELLANEOUS		
SP.1	2401961	Speaker – 25cm (10 in.) speaker
SP.2	2401971	Speaker – 5.5cm (2-1/5 in.) speaker
SP.3	2401981	Speaker – 2cm (4/5 in.) speaker
	4683871	Rubber washer
	2688131	2P terminal
	4936771	Packing (for woofer)
	4786801	Frame (for woofer)
	3944881	Level control panel (left)
	3944882	Level control panel (right)
	2592961	Network P.W.B. ass'y
	3248302	Name plate
	3291211	Knob – level control knob
	4098493	Front grille cover ass'y (left)
	4098494	Front grille cover ass'y (right)
	4687971	Rubber bushing
	9000221	Cabinet ass'y (left) (Rose)
	9000222	Cabinet ass'y (right) (Rose)
	4684581	Latch rubber
	3922181	Latch base
	2748491	Speaker junction cord (2.7m)
	4582251	5φ x 25 tapping screw (for woofer)
	4582252	5φ x 25 tapping screw (for midrange, tweeter)
	4582142	2.7φ x 13 flat head wood screw

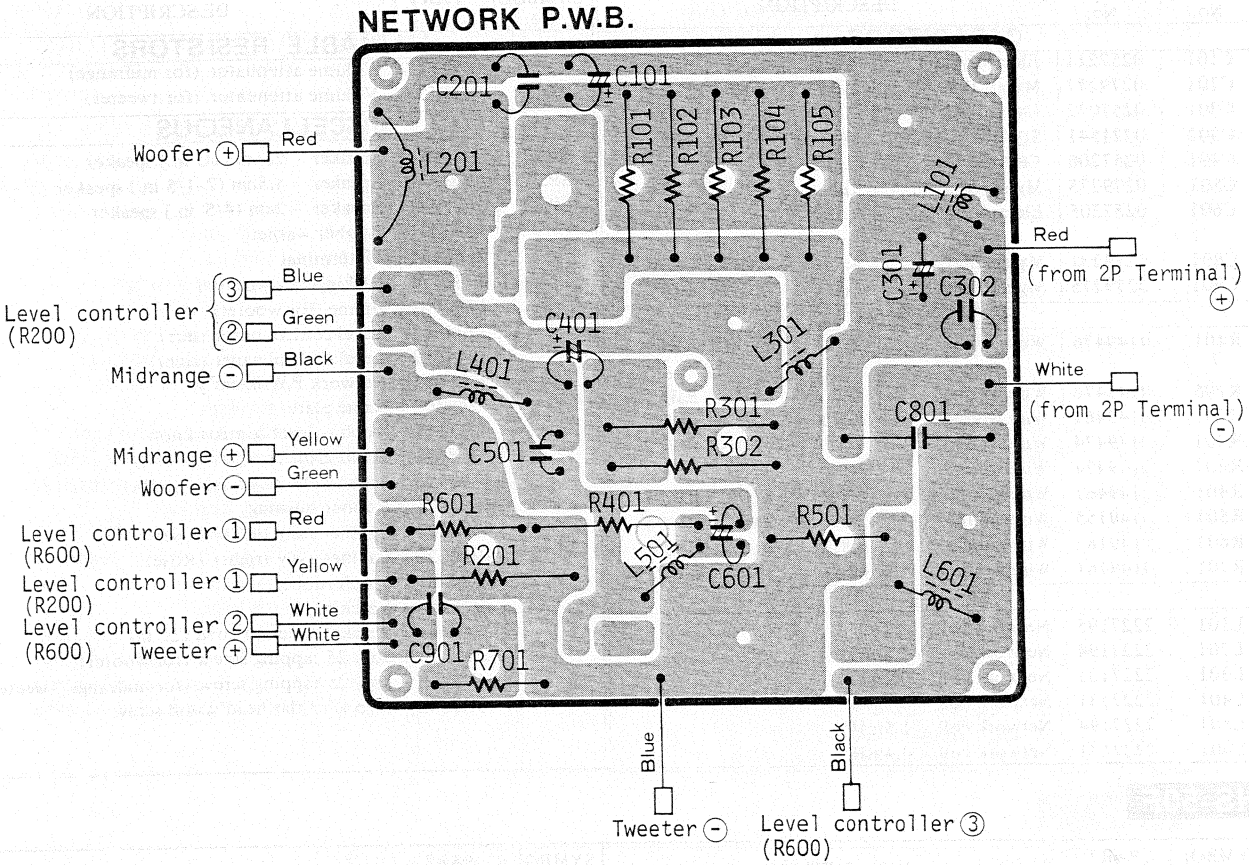
HS-50F

SYMBOL No.	PART No.	DESCRIPTION		
CAPACITORS				
C101	0257210	Electrolytic	33μF	50V
C111	0279231	Electrolytic	4.7μF	250V
C121	0279275	Mylar, film	1μF ±10%	125V
C201	0279275	Mylar, film	1μF ±10%	125V
C202	0279277	Mylar, film	2.2μF ±10%	125V
C301	0257209	Electrolytic	22μF	50V
C401	0257072	Electrolytic	22μF	50V
C402	0221541	Styrol	5600pF ±10%	125V
C501	0257206	Electrolytic	6.8μF	50V
C601	0279275	Mylar, film	1μF ±10%	125V
C701	0257212	Electrolytic	100μF	50V
C801	0257204	Electrolytic	3.3μF	50V
RESISTORS				
R101	0149477	Wire wound	33Ω ±10%	RWC7
≀	≀	≀	≀	≀
R105	0149477	Wire wound	33Ω ±10%	RWC7
R201	0149474	Wire wound	18Ω ±10%	RWC7
R202	0149474	Wire wound	18Ω ±10%	RWC7
R301	0149461	Wire wound	6.8Ω ±10%	RWC7
R401	0149461	Wire wound	6.8Ω ±10%	RWC7
R501	0149461	Wire wound	6.8Ω ±10%	RWC7
R601	0149151	Wire wound	2.2Ω ±10%	RWC5
R701	0149161	Wire wound	6.8Ω ±10%	RWC5
R801	0149161	Wire wound	6.8Ω ±10%	RWC5
COILS				
L101	2227121	Network coil – 1mH		
L201	2227121	Network coil – 1mH		
L301	2227131	Network coil – 0.4mH		

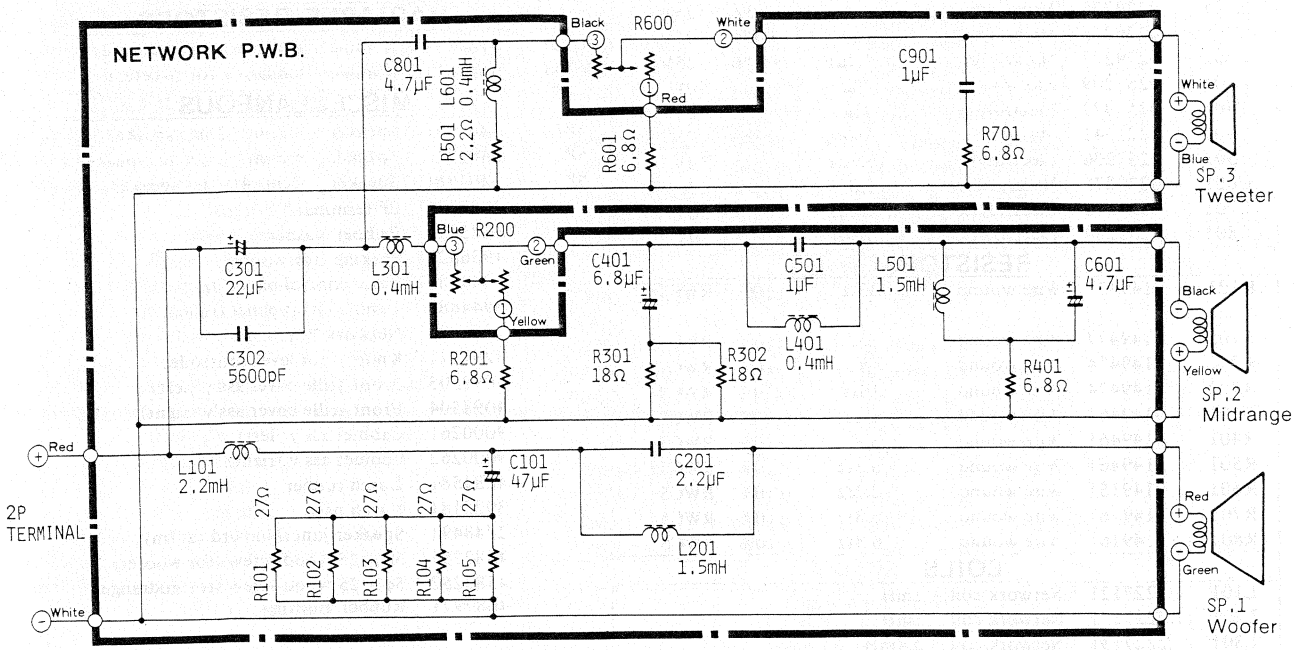
SYMBOL No.	PART No.	DESCRIPTION
L401	2227131	Network coil – 0.4mH
L501	2227194	Network coil – 1.5mH
L601	2227131	Network coil – 0.4mH
VARIABLE RESISTORS		
R300	0168511	Volume attenuator (for midrange)
R700	0168511	Volume attenuator (for tweeter)
MISCELLANEOUS		
SP.1	2401991	Speaker – 30cm (12 in.) speaker
SP.2	2401972	Speaker – 5.5cm (2-1/5 in.) speaker
SP.3	2401981	Speaker – 2cm (4/5 in.) speaker
	2688131	2P terminal
	4683871	Rubber washer
	4936821	Packing (for woofer)
	3944881	Level control panel (left)
	3944882	Level control panel (right)
	2596891	Network P.W.B. ass'y
	3291211	Knob – for level controller
	4098503	Front grille cover ass'y (left)
	4098504	Front grille cover ass'y (right)
	9000261	Cabinet ass'y (left)
	9000262	Cabinet ass'y (right)
	4684581	Latch rubber
	3922181	Latch base
	2748491	Speaker junction cord (2.7m)
	4582251	5φ x 25 wood screw (for woofer)
	4582252	5φ x 25 wood screw (for midrange)
	4687971	Rubber bushing

PRINTED WIRING BOARD·PRINTPLATTEN·PLAN DE BASE

HS-40F

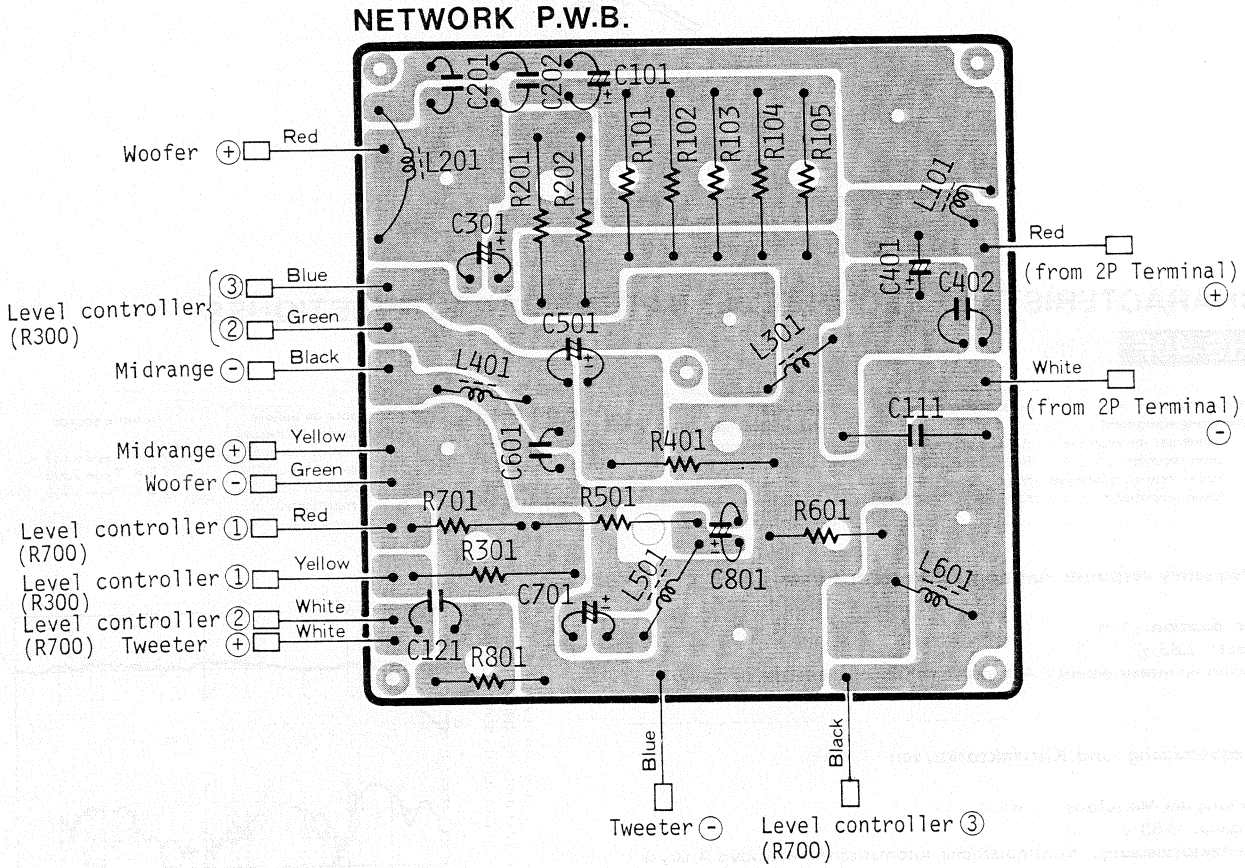


CIRCUIT DIAGRAM·SCHALTPLAN·PLAN DE CIRCUIT

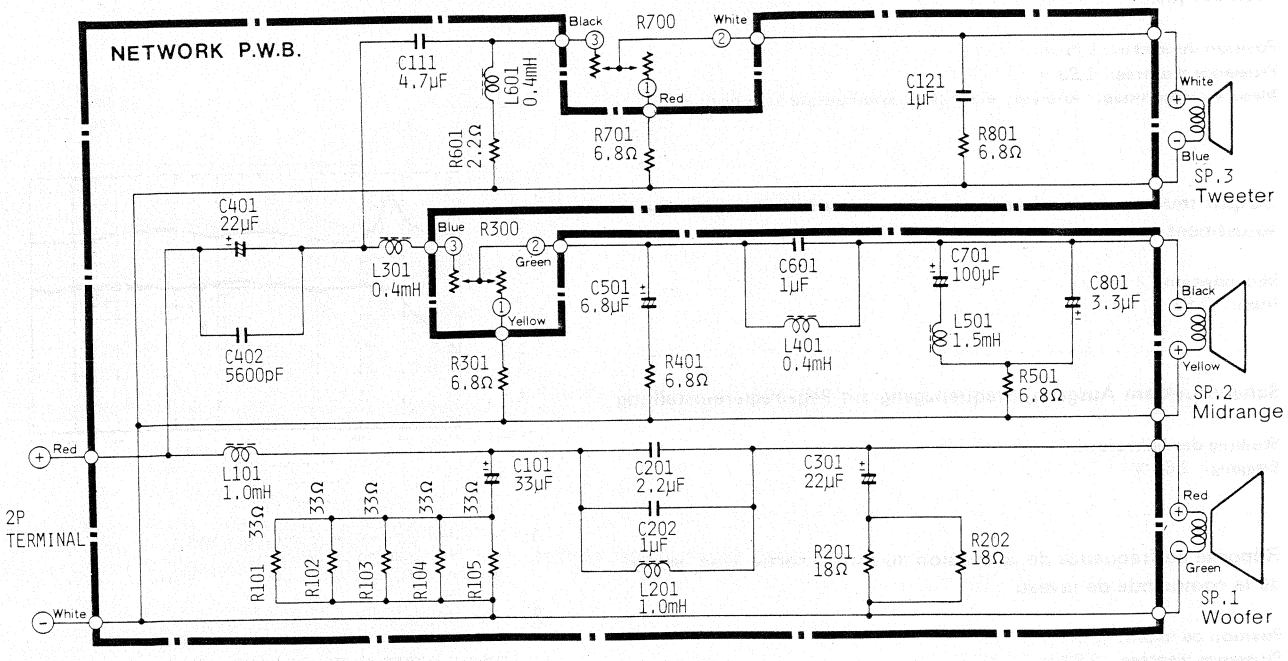


PRINTED WIRING BOARD·PRINTPLATTEN·PLAN DE BASE

HS-50F

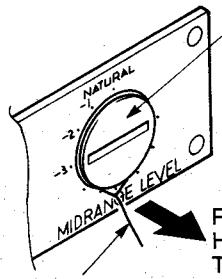


CIRCUIT DIAGRAM·SCHALTPLAN·PLAN DE CIRCUIT



SERVICE POINT ·WARTUNGSPUNKTE ·ENTRETIEN

- Removing the Knob
- Ausbau des Knopf
- Déposer le bouton



Knob
Knopf
Bouton

Pull out
Herausziehen
Tirer

Fine wire such as enamel wire,etc.
Dünner draht wir Emailledraht usw.
Fil fin tel qu'un fil émaillé,etc.

CHARACTERISTICS · TECHNISCHE DATEN · CARACTÉRISTIQUES

HS-40F

Measuring room	Anechoic chamber
Measuring equipment	
Condenser microphone	B & K Type 4133
Level recorder	B & K Type 2305
Audio frequency analyzer	B & K Type 1902, 2010
Power amplifier	KROHN-HITE UF-101A

Meßraum	Schalltoter Raum
Verwendete Meßgeräte	
Kondensatormikrofon	B & K Type 4133
Pegelschreiber	B & K Type 2305
NF-Analysator	B & K Type 1902, 2010
Meßverstärker	KROHN-HITE UF-101A

Chambre de mesure	Chambre sourde
Equipment de mesure	
Microphone capacitif	B & K Type 4133
Traceur de courbes	B & K Type 2305
Spectromètre	B & K Type 1902, 2010
Amplificateur de puissance	KROHN-HITE UF-101A

Frequency response, harmonic distortion curves

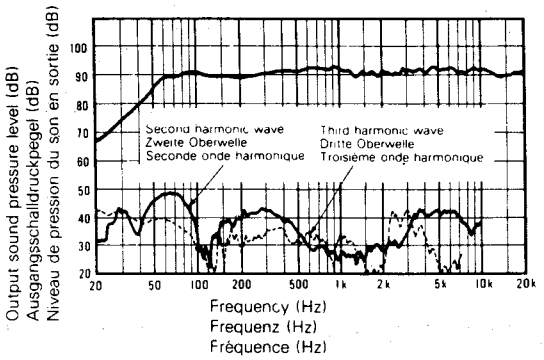
Mic. position: 1 m
Input: 2.83 V
Harmonic measurement: Automatic continuous heterodyne analysis

Frequenzgang- und Klirrfaktorkurven

Stellung des Mikrofons: 1 m
Eingang: 2,83 V
Klirrfaktormessung: Kontinuierliche automatische Heterodyn-Analyse

Courbe de réponse en fréquence et courbe de distorsion harmonique

Position du micro: 1 m
Puissance d'entrée: 2,83 V
Mesure harmonique: Analyse hétérodyne automatique et continue



Output sound pressure frequency response with level controller adjustment

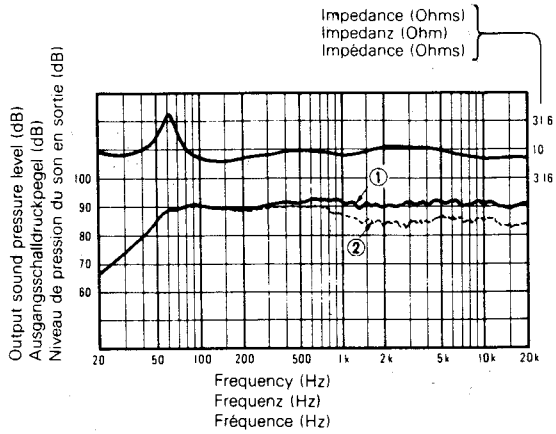
Mic. position: 1 m
Input: 2.83 V

Schalldruck am Ausgang, Frequenzgang mit Pegelreglereinstellung

Stellung des Mikrofons: 1 m
Eingang: 2,83 V

Réponse de fréquence de la pression du son de sortie avec réglage de la commande de niveau

Position du micro: 1 m
Puissance d'entrée: 2,83 V



① NATURAL position (both midrange, tweeter)
NATURAL Stellung (Mitteltöner und Hochtöner)
Position NATURAL (haut-parleur intermédiaire et tweeter)

② Leftmost position (both midrange, tweeter)
Stellung ganz links (Mitteltöner und Hochtöner)
Position extrême gauche (haut-parleur intermédiaire et tweeter)

HS-50F

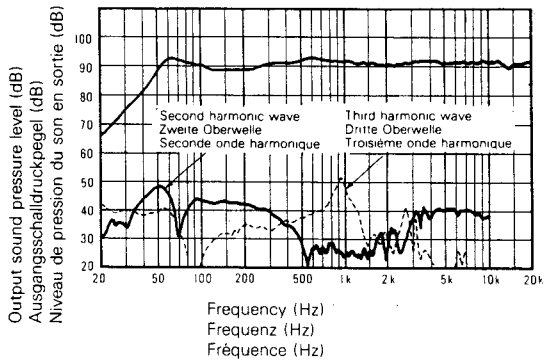
Measuring room	Anechoic chamber
Measuring equipment	
Condenser microphone	B & K Type 4133
Level recorder	B & K Type 2305
Audio frequency analyzer	B & K Type 1902, 2010
Power amplifier	KROHN-HITE UF-101A

Meßraum	Schalltoter Raum
Verwendete Meßgeräte	
Kondensatormikrofon	B & K Type 4133
Pegelschreiber	B & K Type 2305
NF-Analysator	B & K Type 1902, 2010
Meßverstärker	KROHN-HITE UF-101A

Chambre de mesure	Chambre sourde
Equipment de mesure	
Microphone capacitif	B & K Type 4133
Traceur de courbes	B & K Type 2305
Spectromètre	B & K Type 1902, 2010
Amplificateur de puissance	KROHN-HITE UF-101A

Frequency response, harmonic distortion curves

Mic. position: 1 m
Input: 2.83 V
Harmonic measurement: Automatic continuous heterodyne analysis



Frequenzgang- und Klirrfaktorkurven

Stellung des Mikrofons: 1 m
Eingang: 2,83 V
Klirrfaktormessung: Kontinuierliche automatische Heterodyn-Analyse

Courbe de réponse en fréquence et courbe de distorsion harmonique

Position du micro: 1 m
Puissance d'entrée: 2,83 V
Mesure harmonique: Analyse hétérodyne automatique et continue

Output sound pressure frequency response with level controller adjustment

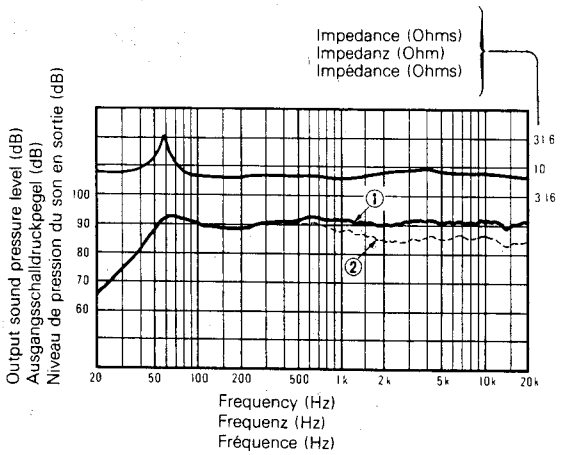
Mic. position: 1 m
Input: 2.83 V

Schalldruck am Ausgang, Frequenzgang mit Pegelreglereinstellung

Stellung des Mikrofons: 1 m
Eingang: 2,83 V

Réponse de fréquence de la pression du son de sortie avec réglage de la commande de niveau

Position du micro: 1 m
Puissance d'entrée: 2,83 V



① NATURAL position (both midrange, tweeter)
NATURAL Stellung (Mitteltöner und Hochtöner)
Position NATURAL (haut-parleur intermédiaire et tweeter)

② Leftmost position (both midrange, tweeter)
Stellung ganz links (Mitteltöner und Hochtöner)
Position extrême gauche (haut-parleur intermédiaire et tweeter)